

**Raymond's Studies of the Greek Poets.**

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ral exponents and the abnormal function of the nervous system, and, again, between divine fury or so-called inspired enthusiasm of the prophet, and that extraordinary activity of the brain's functions, in which the emotional and intellectual energies of an individual are united in some great achievement.

A Life of Erasmus Darwin.

A publication which is likely to be warmly welcomed by the admirers of Charles Darwin, the volume entitled *Erasmus Darwin*, lately issued by the Appletons. We have here at a glance the story of the life of the English naturalist, as printed about a year ago in the German scientific journal, *Koerner's Jahrbuch*, which was translated into English by the grandfather of our contemporary scientist, and had anticipated the views of Lamarck, and distinctly he had aimed to establish a physiological basis of mental phenomena. To the English version of this work, which was published in 1802, is appended a graphical sketch of the author of "Zoonomia" by his grandson. This prefatory matter contains a multitude of interesting details relating to one of the most remarkable men of the last century, whose capacity for the intellectual activity of his age, and his responsive and fruitful treatment in the pursuit of his life's mission.

The account of his life and character, now furnished by his grandson, is the fullest account, and will be found to comprehend much of the information. For the purpose of this article, however, we propose merely to indicate some of the chief points of interest, as pointed out by Dr. Krause in the writings of the eighteenth century biologist.

It would indeed seem that Charles Darwin theories find their most impressive illustration in his own personal and genealogical history. Erasmus Darwin was a member of an intellectual inheritance whose germ was distinctly traced in the capacities and achievements of his grandfather, and he was impelled, by congenial propensities, to carry out a programme which his ancestor sketched forth and left behind. Almost everywhere in the writings of Darwin, we are reminded by at least a chapter in the writings of his grandfather. The mystery of hereditary transmission, the protective arrangements of animals and plants, sexual selection, insective plants, and the analysis of the emotions of the human mind, are all subjects which Darwin, as an infant, are to be found already discussed in the writings of the elder Darwin. We have, of course, the smallest ground for depreciation on this score the labors of the man who shed a new lustre upon the name. It is true that he has formed a more complete picture of the fullness of your fancy, and another buttress them by an enormous quantity of and carry them to such a degree of probability as to satisfy a large proportion of those capable of judging. Dr. Erasmus Darwin, who then, in the early part of the century, was a philosophical ideal, and the expression "Darwinizing," as employed by Coleridge, for example, was accepted in England nearly as the antithesis of sober biological investigation.

It is the object of Dr. Krause's essay to show that a very considerable tribute of recognition is due to Erasmus Darwin, not only for his early history, and to this end he adduces a great deal of evidence. It appears that the question of the transformation of species, and their development into higher forms, was a favorite subject with the elder Darwin. In a note to his didactic poem, "Zoonomia," he says, "I have brought it forward, and after having sought the stratified formation of the earth, he has shown that there are many apparently new or incomplete appendages to plants and animals which seem to show they have gradually developed from some other form, such as the stamens without anthers, and without stigmas, of several plants—such as halteres or rudiments of wings of some winged insects, and the paws of male mammals; swine, too, have four toes, but only three are developed, and the fourth is long enough for use." In another on the Terrestrial plant, the theory of rudimentary organs is outlined still more completely. "There is a curious circumstance," he says, "belonging to the class of it, which has been pointed out by me, that the rudiments of stamens above described, two little knobs are found placed each on a stalk or peduncle, generally under an arched scale, which appear to be rudimentary wings, and are called by Linnaeus 'callosities' or 'rudiments of stamens.'" Other animals, he continues, "marks of having, in a long process of undergone changes in some parts of their bodies, which 'may have been effected to accommodate them to new ways of proceeding in the world, and to the habits of male animals, and which are very analogous with a thin kind of milk at nativity, is a wonderful instance of kind. Perhaps, he adds, "all the proportions of nature are in their proper order, and perfection, in connection with another part of the same poem, he says, "the colors of insects, and many smaller mammals, contribute to conceal them from larger ones which prey upon them, and pillars, for instance, which feed on leaves of green plants; earth worms, the huge earth and the small, the black and the white, are colored like; multitudes of frequent hedges have greenish backs like leaves, and light colored bellies like the leaves, and are hence less visible to the hawk passing under them or over them. He remarks, another example, "the colors of the skin in the case of frogs which vary their hue to the mud of the streams in which they live, those which live on trees being green."

Erasmus Darwin's chief scientific work, "Zoonomia," was designed to formulate a theory of the origin of life, and a guide for pathology. Upon the author's own theory it produced a very marked improvement, although most of the ideas put forth were in advance of his epoch. The fundamental conception seems to be that in plants and animals living forms at work which endeavor to become sensibly more perfect, and to adapt them to the circumstances of the world, so that the assumption of innate or divinely implanted impulses and instincts is rendered unnecessary, and even the process of thought appears attainable as a result of the action of the senses and combination. All kinds of human knowledge originate from the senses, the action of which is accordingly first of all investigated. As regards the apparently inborn faculties of young animals bring them into the world, he explains them as the result of the muscles of the eye, the guide of the senses and stimuli. Erasmus Darwin very fully studied this subject, which he has elaborated by his grandson with so much success, and deduces his formula especially the first impressions of new-born creatures, and the influence of the senses, and the but he does not regard the instincts as communicated solely by imitation. He accords, without hesitation, the heritability of acquired corporeal peculiarities and faculties. Upon these points there is no doubt, and the author's theory is an introductory observation of great importance, which contains, as in a nutshell, the explanation of a fundamental law of biology. "The ingenious Dr. Hartley," says Erasmus Darwin, "is of opinion that our first action, or of sentiment, which becomes indelible, continuing after death in a state of existence. Now, I must apply the ingenious idea to the generation or production of the embryo, or new animal, which produces a short time in the same work the author was already developed in his mind. We do not forget that this book was published a few years before the appearance of Lamarck's treatise, in which the principles of the

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